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BOOK REVIEW

GIS and Public Health (Second Edition)

By Ellen K. Cromley and Sara L. McLafferty. 2012. New York, NY: Guilford Press.
503 + xxiv. ISBN: 978-1-60918-750-7

Not infrequently a student will come to me and say, "I want to learn GIS." In the conversation that follows, we usually arrive quickly at the conclusion that what the student wishes to learn is how to make maps.

Maps are a key element to any GIS analysis since they help convey information otherwise difficult to see and making informative maps is a necessary tool that a GIS analyst must possess. But, the power of GIS exists in its ability to explain through careful analysis how space shapes the world in which we live, a power too great to rest solely on map making alone.

To resolve this confusion, I will give my students a copy of Ellen Cromley and Sara McLafferty's *GIS and Public Health* to peruse so that they can appreciate the breadth and power of GIS. *GIS and Public Health*, just released in an updated second edition, is a compendium of GIS methods and applications of those methods to public health research.

Cromley and McLafferty set out an ambitious goal to explain GIS, its methods and structure, and how to use it to solve a number of different research questions. Wisely, they forsake exhaustive coverage of topics for economical descriptions of topics. Each chapter provides readers enough context to understand each tool, method and concept but not so much that readers become bogged down in minutiae. The first three chapters describe GIS tools while Chapters 5-8 survey spatial analytical tools useful for public health researchers. Chapter 4 elegantly bridges these two sections by providing a detailed discussion of mapping, including a valuable section on internet mapping tools. The placement of this chapter will help me convey to students how much goes into mapping, but also how elementary mapping is to GIS as a whole. The authors devote the final section of four chapters to "the institutional context of public health GIS" (p. 13), including two chapters new to this edition that focus on health disparities (Chapter 11) and public participation in GIS (Chapter 12).

Cromley and McLafferty's straightforward writing style and judicious selection of material make this a book I would both feel comfortable giving to my students as a primer and keep handy as a reference for my own research. Their extensive citations lead the reader to empirical studies in the peer-reviewed literature that can lead readers both to more information and to applied examples of the topic. I also appreciate Cromley and McLafferty's extensive inclusion of graphics (the book's figure list alone is eight pages long), not only because it describes their concepts they explain, but it keeps the excitement that draws many students—and drew many current practitioners—to GIS research in the first place.

The book would be a good text for a GIS methods class. Although public health students would gain the most from examples, professors teaching GIS to students regardless of their subject area might consider adopting this text because of the thoroughly documented GIS principles and methods. The book's progression from principles and structure of GIS to analytical methods to applications could form a reasoned structure for a semester-long class and the authors' new online

supplement of GIS lab exercises provide useful pedagogical tools. For a more substantively focused class on the spatial aspects of public health research, the book would serve as a good companion to a more topically-oriented text or compilation of articles.

One concern that I have about the book is that important geographic concepts are often buried in chapters. For example, the modifiable areal unit problem (MAUP) on pages 128-133 is a subsection of chapter 4, "Mapping Health Information," and almost exclusively discusses the problem in terms of map-making. Given how students often come to GIS, I worry that this foundational concept would appear to them to be one about making maps, not about potential problems underlying areal data and their analysis. Burying the topic in a subsection within a chapter on mapping makes referencing the problem later difficult, as Cromley and McLafferty do in the final chapter when discussing neighborhood definitions in health disparities research. With the advantages of both hindsight and not being required me to implement the suggestion, I might have included a chapter on "geographical concepts" that collected topics like the MAUP, spatial reliability and validity of data, and hypothesis generation in a spatial context. All of the information exists in the book as written, it is just scattered throughout in a way that might make it difficult for students to grasp the generality of the concepts.

This relatively minor quibble does not dampen my enthusiastic recommendation of *GIS and Public Health* to students, professors, and practitioners alike. As GIS becomes an increasingly popular and useful tool for public health research and practice in the United States and abroad this comprehensive but accessible text should—and I expect will—continue to be a mainstay of GIS education of public health researchers and practitioners.

The next student knocking my door asking to learn GIS will certainly find herself reading it.

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Visualizing Data Patterns with Micromaps

By Daniel B. Carr and Linda Williams Pickle. 2010. Series: Interdisciplinary Statistical Series. Boca Raton, Florida: CRC Press (a Chapman and Hall book). 164 + xvii.
ISBN 978-1-4200-7573-1, $69.95

Micromaps are graphics that link statistical information to an organized set of small maps that can 'highlight geographic patterns and associations' among variables and facilitate hypothesis generation 'about plausible causes of the observed trends and relationships' (p.1). For almost two decades Daniel Carr and Linda Williams Pickle have been at the forefront in developing data visualization techniques, and their tour of micromaps is worth taking. The tour is accomplished in a short book containing seven chapters and an appendix of data sources and notes for the empirical examples visited on route. The examples focus on cancer and health service utilization but the diverse set includes studies of poverty, crime, education, and pollution as well as use of data on baseball performance, precipitation and growing season, and mammal brain sizes. The tour includes a self-paced element as the book is accompanied by a limited but evolving set of web resources providing access to micromap software, R-code, tutorials, and sample boundary files and data. Some of these additional resources allow users to